Notebook, N-93-11-20

This notebook, which covers the period December 1893-April 1894, is a continuation of N-93-08-01. It was used by Joseph W. Harris for notes and calculations regarding phonograph cylinder experiments, nos. 101-486, and for instructions on the molding process. There are also notes and drawings on bricking experiments for iron ore concentrate. At the beginning of the book is a 2-page list of chemical supplies. The front cover is labeled "Experimental & Analytical Chemical Notes. J.W. Harris." The book contains 183 numbered pages. Several pages were removed before the book was paginated.

Blank pages not filmed: 4-5, 126-133.

Prices of Sundry materials

Paraffin wax	lb.	4 - 7 cts
Tallow	"	5½ "
Carnauba wax	"	10 - 17 "
Japan wax	"	8 "
Syrian asphalt	"	6 - 8 "
Cuban asphalt, hard	"	4 "
Cuban " soft	"	4½ "
Trinidad asphalt	"	1½ cts
Coal tar	"	1 ct
Coal tar pitch	"	1 ct
Coal " " Scotch	"	¾ "
Burgundy pitch	"	2½ - 3 "
Bees wax	"	25 "
Ceresin	"	11 "
Ozokerite	"	7 "
Lima Petroleum	gal.	2.75 "
Pennsylvania Petroleum	gal	
Mexican asphalt, soft	lb.	5 cts
Rosin - B -	"	0.5 "
Reg. Phonograph wax	"	16 - 20 "
Stearic Acid		10 "
Stearate of Soda		10 "
Aluminate of Soda		5.5 cts
Naphthalin, refined		5 cts
Stearate of Aluminum		12 "

Spermaceti	300 lb.
White Bayberry	13 1/2 "
Yellow Bayberry	11 "
Paraffin	6 "
Cocoa Butter	6 "
Oleic Acid	3 "
Crude Anthracene	4 "
Crude Naphthalene	3 1/2 "
Yellow Beeswax	22 "
Crude Creosote	5 gal
Wood Tar Pitch	1/2 of 1%
Scotch pitch	0.356 of 1%

Experiments for a base for Phonograph Cylinders.

#101 - 5 grams pitch, 1 gram soft mexican asphalt, 3 grams carnauba, 30 Mg NaOH not good

102 - 5 grams pitch, 2 grams soft mexican 3 grams carnauba, 30 Mg. NaOH
No good

103 5 grams pitch, 3 grams soft mexican, 3 grams carnauba, 30 Mg. NaOH
No good

104 - 3 grams pitch 4 grams soft mexican 3 grams carnauba, 30 mg NaOH
No good

105 5 grams pitch, 5 grams soft mexican 3 grams carnauba 30 Mg NaOH
good

106 - 5 grams pitch, 1 gram trinidad, 1 gram Japan wax, 30 Mg NaOH
No good

107 - 5 grams pitch, 2 grams trinidad, 1 gram Japan wax 30 Mg NaOH
No good

108 5 grams pitch, 3 grams trinidad
1 gram Japan wax, 30 Mg NaOH
No Good

109 - 5 grams pitch, 4 grams trinidad
1 gram Japan wax, 30 Mg NaOH
No Good

110 5 grams pitch, 5 grams trinidad
1 gram Japan wax, 30 mg NaOH
No Good

111 5 grams pitch, 1 gram trinidad
2 grams Japan wax, 30 Mg NaOH
No Good

112 5 grams pitch, 2 grams trinidad
2 grams Japan wax 30 mg NaOH
No Good

113 5 grams pitch 3 grams trinidad
2 grams Japan wax 30 mg NaOH
No Good

114 5 grams pitch, 4 grams trinidad
2 grams Japan wax, 30 mg NaOH
No Good

115 5 grams pitch, 5 grams trinidad
2 grams Japan wax 30 mg NaOH
No Good

116 5 grams pitch 1 gram trinidad
3 grams Japan wax, 30 mg NaOH
No Good

117 - 5 grams pitch, 2 grams trinidad
3 grams Japan wax, 30 mg NaOH
No Good

118 5 grams pitch, 3 grams trinidad
3 grams Japan wax, 30 mg NaOH
No Good

119 - 5 grams pitch, 4 grams trinidad
3 grams Japan wax, 30 mg NaOH
No Good

120 5 grams pitch, 5 grams trinidad
3 grams Japan wax, 30 mg NaOH
No Good

121 5 grams pitch, 1 gram soft mexican
1 gram Japan wax, 30 mg NaOH

122 5 grams pitch, 2 grams soft mexican
1 gram Japan wax 30 mg NaOH

123 5 grams pitch 3 grams soft mexican
1 gram Japan wax 30 mg NaOH

124 5 grams pitch 4 grams soft mexican
1 gram Japan wax 30 mg NaOH

125 5 grams pitch, 5 grams soft mexican
1 gram Japan wax, 30 mg NaOH

126 - 5 grams pitch, 1 gram rosin, 1 gram Carnauba, 20 mg NaOH

127 - 5 grams pitch, 2 grams rosin, 1 gram carnauba, 20 mg NaOH

128 - 5 grams pitch, 3 grams rosin, 1 gram carnauba, 20 mg NaOH

129 - 5 grams pitch, 4 grams rosin, 1 gram carnauba, 20 mg NaOH

130 - 5 grams pitch, 5 grams rosin, 1 gram carnauba, 20 mg NaOH

131 - 5 grams pitch, 1 gram rosin, 2 grams carnauba, 20 mg NaOH

132 - 5 grams pitch, 2 grams rosin, 2 grams carnauba, 20 mg NaOH

133 - 5 grams pitch, 3 grams rosin, 2 grams carnauba, 20 mg NaOH

134 - 5 grams pitch, 4 grams rosin, 2 grams carnauba, 20 mg NaOH

135 - 5 grams pitch, 5 grams rosin, 2 grams carnauba.

Stock made from HS7 -
HS7ia
5 grams tinnitus, 3 grams pitch
3 grams cornauba, 30 mg NaOH

125 grams tinnitus, 75 grams
coal tar pitch, 75 grams cornauba
wax, 750 mg. NaOH.

This is poured in mould
with hollow core & can
to be chilled quickly, or
wax will stick very tight
to it. I poured water in
the core to cool it.
Used cottonseed oil to grease
moulds, it proves to be
soluble in the molten wax.
Must use an oil insoluble
in the asphalt.

In moulding these cylinders,
use cold moulds and cold cores.
Wet place wet rag around mould.
Remove inner core as soon as wax

is sufficiently cooled, as the contraction
will be so great as to render
it impossible to do so. Let
cylinder cool in outer mould.
Wet rags can be placed on mould
after core is removed, if desired;
it will hasten cooling. Cylinder
is easily removed from mould
when cool. Will fall out.
Use castor oil.

To coat regular wax around the
base here would harm cylinder
+ core cold. Pour in regular wax
very hot, this will have the effect
of softening the base enough to run
together and the hot mould will
keep the wax sufficiently fluid to
make a good cylinder. After a few
minutes, the mould can be cooled
by a wet rag, and removed when
cool.
A "compound" or "double" cylinder
was left in the air during a
cold rainy + windy night, it did
not seem to be injured any the
next morning.

Experiments on emulsions for a waterproofing, using rosin as a base.

136 – Rosin, little Na_2O, no good

137 – Rosin, little Na_2O, little pitch, no good

138, Rosin, little Na_2O, little pitch, little carnauba, no good

139, Rosin, little Na_2O, little pitch, little stearic acid, no good.

140 Rosin, little Na_2O, little pitch little Japan wax, no good

141, Rosin, little Na_2O, little trinidad, no good.

142, Rosin, Na_2O, Trinidad, Carnauba, no good

143, Rosin, Na_2O, Soft Mexican asphalt no good

144, Rosin, Na_2O, Syrian asphalt – no good

145, Rosin, Na_2O, Stearate of Soda no good

146, Rosin, Na_2O, Stearate of Alumina, no good

147 – Rosin, Na_2O, Naphthalin no good

148, Rosin, Na_2O, Stearate of Soda, Carnauba wax no good

149, Rosin, Na_2O, Stearate of Soda, Carnauba, Japan wax no good

150 Rosin, Na2O, Stearate of Soda
Stearate of Aluminum
no good

151 60 Trinidad, + 1/2 gram Na2O,
40 Japan wax,
no good 4.1 cts per lb

152 75 Trinidad
25 Carnauba + 100 mg. Na2O
no good 4 cts per lb

153 - 5 parts #151
5 " Reg wax
fair 10 cts per lb

154 6 parts #151
4 " Reg wax
fair 9 cts lb

155 7 parts 151
3 " Reg wax
no good

156 - 8 parts #151
2 " Reg wax
no good

157 9 parts 151
1 " Reg wax
no good

158 - 5 parts #152
5 " Reg wax
good 10 cts per lb

159 6 parts 152
4 " Reg wax
good 8.8 cts per lb

160 7 parts 152
3 " Reg wax
good 7.6 cts per lb

161 8 parts 152
2 " Reg wax
good 6.4 cts per lb

162 9 parts 152
1 " Reg wax
good 5.2 cts per lb

163 – 5 parts 151
3 " Stearate of Soda
no good

164 – 6 parts 151
4 " Stearate of Soda
no good

165 – 7 parts 151
3 " Stearate of Soda
no good

166 8 parts 151
2 " Stearate of Soda
no good

167 – 9 parts 151
1 " Stearate of Soda
no good

168 5 parts 152
5 parts Stearate of Soda
good 7 cts per lb

169 6 parts 152
4 " Stearate of Soda
no good

170 – 7 parts 152
3 " Stearate of Soda
good 5.8 cts

171 – 8 parts 152
2 " Stearate of Soda
good 5.2 cts

172 9 parts 152
1 " Stearate of Soda
good 4.6 cts

173 5 parts 152
3 " Japan wax
no good

174 6 " 152
4 " Japan wax
no good

175 7 " 152
3 " Japan wax
no good

176 8 " 152
2 " Japan wax
no good

177 9 " 152
1 " Japan wax
fair 4.4 cts

178 – 60 grams Trinidad
0.5 " No. 20
fair 2.1 cts. lb.

179 – 9.5 grams 178
0.5 " Japan wax
no good

180 9 grams 178
1 " Japan wax
no good

181 8.5 " 178
1.5 " Japan wax
no good

182 8 grams 178
2 " Japan wax
no good

183 7.5 " 178
2.5 " Japan wax
no good

184 9 grams 178
1 " Ozokerite
good 2.6 cts lb

185 – 8 grams 178
2 " Ozokerite
fair 3.1 cts lb

186 7 grams 178
3 " Ozokerite
good 3.52 cts lb

187 6 grams 178
4 " Ozokerite
no good

188 5 grams 178
5 " Ozokerite
no good

189 4 grams 178
6 grams Ozokerite
no good

190 3 grams 178
7 grams Ozokerite
no good

191 9 grams 178
~~47.5~~ 1 " Soft Mexican
~~47.5~~ good 2.4 cts lb

192, 8 grams 178
2 " Soft American
no gel

193 7 " 178
3 " Soft American
no gel

194 6 " 178
4 " Soft American
no gel

195 5 " 178
5 " Soft American
fair 3.15 ctc lb

196 – 8 " 178
220.5 – 1 " Cannauba
27.5 – 1 " Stearate of Soda
good 3.7 ctc lb

197 – 7 " 178
1 " Cannauba
2 " Stearate of Soda
fair 4.5 ctc lb

198 – 6 grams 178
1 " Cannauba
3 " Stearate of Soda
fair 5.26 ctc lb

199 5 " 178
1 " Cannauba
4 " Stearate of Soda
fair 6.1 ctc lb

200 – 7 " 178
192.5 – 2 " Cannauba
55 – 1 " Stearate of Soda
27.5 – 1 good 4.5 ctc lb

201 – 6 " 178
165 – 2 " Cannauba
55 – 7 " Stearate of Soda
55 good 5.2 ctc lb

202 5 " 178
2 " Cannauba
3 " Stearate of Soda
fair 6.1 ctc lb

203 4 " 178
2 " Cannauba
4 " Stearate of Soda
fair 6.94 ctc lb

204 — 3 grams 178
82.5 — 2 " Camanda
550 — 7 " Stearate of Soda
1370.5 — 5 " good 7.6 cts lb

205 — 6 " 178
165 — 3 " Camanda
825 — 1 " Stearate of Soda
275 good 5.12 cts lb

206 — 5 " 178
3 " Camanda
2 " Stearate of Soda
fair 6.1 cts lb

207 — 4 " 178
3 " Camanda
3 " Stearate of Soda
no good

208 — 3 " 178
3 " Camanda
4 " Stearate of Soda
no good

209 — 2 " 178
3 " Camanda
5 " Stearate of Soda
no good

210 — 9 grams 178
1 " Camanda
no good 2.8 cts lb

211 — 8 " 178
2 " Camanda
no good 3.6 cts lb

212 — 7 " 178
3 " Camanda
no good 4.4 cts lb

213 — 6 " 178
4 " Camanda
no good 5.2 cts lb

214 — 5 " 178
5 " Camanda
no good 6 cts lb

215 — 9 " 178
1 " Stearate of Soda
fair 2.8 cts lb

216 — 8 " 178
2 " Stearate of Soda
fair 3.6 cts lb

217 - 7 grams 178
3 " Stearate of Soda
no good 4.4 cts lb

218 6 " 178
4 " Stearate of Soda
no good 5.2 cts lb

219 5 " 178
5 " Stearate of Soda
fair 6 cts lb

220 9 " 178
1 " naphthalin
In this Expt. a considerable portion of the naphthalin was lost by evaporation. I do not know the proportions varied in sample.
no good 2.3 cts lb

221 9 grams 178
1 " Stearate Alumina
no good 3 cts lb

222 8 " 178
2 " Stearate of alumina
no good 4 cts lb

223 - 7 grams 178
3 " Stearate of Alumina
no good 5 cts lb

224 6 " 178
4 " Aluminum Stearate
fair 6 cts lb

225 5 " 178
5 " Aluminum Stearate
fair 7 cts lb

226 - 10 " 178
250/0.250 10 milligrams Naphthalin
possible 2 cts lb

227 10 grams 178
250/0.500 20 milligrams Naphthalin
possible 2 cts lb

228 10 grams 178
250/0.750 30 milligrams Naphthalin
possible 2 cts lb

229 10 grams 178
250/1.00 40 milligrams Naphthalin
possible 2 cts lb

230 10 grams 178
2.50 - 50 milligrams Naphthalin
possible 2 cts lb

231 5 grams 178
2.50 - 50 milligrams Naphthalin
possible 2 cts lb

232 5 grams 178
2.50 - 75 milligrams Naphthalin
possible 2.1 cts lb

233 5 grams 178
2.50 - 100 milligrams Naphthalin
possible 2.1 cts lb

234 5 grams 178
2.50 - 125 milligrams Naphthalin
6.25 possible 2.125 cts lb
(no good)

235 5 1/2 grams 178
4 " Camauba
1/2 " Japan wax
no good 5.5 cts lb

236 3 1/4 " 178
4 " Camauba
3/4 " Japan wax
no good 5 2/3 cts lb

237 5 grams 178
4 " Camauba
1 " Japan wax
no good 5.8 cts lb

238 4 3/4 grams 178
4 " Camauba
1 1/4 " Japan wax
no good 6 cts lb

239 4 1/2 grams 178
4 " Camauba
1 1/2 " Japan wax
good 6.1 cts

240 (106, 100, 44) 4 1/4 " 178
4 " Camauba
1 3/4 " Japan wax
good 6 1/4 cts lb

241 4 " 178
4 " Camauba
2 " Japan wax
no good 6.4 cts lb

242 7 Rosin
2 Carnauba
1 Stearate of Soda
no good

243 6 Rosin
2 Carnauba
2 Stearate of Soda
No Good

244 5 Rosin
2 Carnauba
3 Stearate of Soda
no good

245 7 Rosin
3 Carnauba
no good

246 6 Rosin
3 Carnauba
1 Stearate of Soda
no good

247 5 Rosin
3 Carnauba
2 Stearate of Soda
no good

248 7 Rosin
2 Stearate of Soda
1 Japan wax
no good

249 6 Rosin
3 Stearate of Soda
1 Japan wax
Good 41 Ch 4

250 5 Rosin
4 Stearate of Soda
1 Japan wax
no good

251 9 Rosin
1 Japan wax
no good

252 8 Rosin
2 Japan wax
no good

253 7 Rosin
2 Japan wax
1 Carnauba
no good

254 5 Rosin
3 Syrian Asphalt
2 Carnauba
no good

255 5 Rosin
2 Syrian
3 Carnauba
no good

256 250 grams Carnauba
1 " Soda Hydrate
10 cc

257 250 " Syrian Asphalt
1 " Soda hydrate
9 cc

258 3 grams 256
3 " 257 +
4 " Rosin
no good

259 2 " 256
3 " 257 +
5 " Rosin
no good

260 2 grams 256
2 " 257
6 " Rosin +
no good

261 2 " 256
2 " 257 +
2 " Stearate of Soda
2 " " " Alumina
2 " Rosin
no good

262 2 " 256
3 " 257 +
3 " Rosin
2 " Stearate of Soda
no good

263 2 " 256
3 " 257 +
3 " Rosin
2 " Stearate Alumina
no good

264 6 Rosin
2 256
1 Gum Arabic +
1 257
no good

265 - 6 Rosin
2 Lead Carbonate
2 256 +
no good

266 6 Rosin
2 Lead Carbonate
2 257 +
no good

267 - 6 Rosin
2 257 +
2 Bay nut
no good

268 6 Rosin
2 256
1 257 +
1 Lead Nitrate
no good

269 6 - Rosin
1 - Litharge
2 - 256
1 - 257 +
no good

270 9 Rosin
1 Extract Logwood
no good

271 9 Rosin
1 Sumac
fair

272 9 Rosin
1 Euphorbium
no good

273 9 Rosin
1 Gum Kino
no good

274 9 Rosin
1 Gum Lac
no good

275 9 Rosin
1 Blood Albumen
no good

276 8 - Rosin
1 - Gum Arabic
1 - 156 +
no good

277 – 8 Rosin
1 Gum Mastic +
1 256
no good

278 8 Rosin
1 Gum Kauri +
1 256
no good

279 8 Rosin
1 Gum Amalgum +
1 256
no good

280 8 Rosin
1 Gum Guaiacum +
1 256
no good

281 7 Rosin
1 Hard tar pitch +
2 256
no good

282 9 Rosin
1 Catechu
no good

283 8 Rosin
1 Gum Thus +
1 256
for bulk

284 8 Rosin
2 Gelatine
no good

285 8 Rosin
1 Shellac
1 Japan wax
no good

286 8 Rosin
1 Gum Gotham
1 Japan wax
no good

287 8 Rosin
1 Burnt Umber +
1 256
no good

288 8 Rosin
2 Acetate Manganese
no good

289 7 Rosin
2 Japan Wax
1 2156
no good

290 7 Rosin
2 Japan Wax
1 257
no good

291 7 Ros
1 Japan Wax
2 256
too sticky

292 7 Rosin
1 Japan wax
2 257
no good

293 8 Rosin
1 Japan Wax
2 256
too sticky

294 8 Rosin
1 Japan wax
1 257
too sticky

295 6 Rosin
2 Japan wax
2 Stearate Soda
too soft

296 6 Rosin
1 Japan wax
3 Stearate Soda
fair too sticky

297 6 Rosin
3 Japan wax
1 Stearate Aluminum
no good

298 6 Rosin
2 Japan wax
2 Stearate Aluminum
too sticky

299 6 Rosin
1 Japan wax
3 Stearate Aluminum
too sticky

300 7 Rosin
2 Japan Wax
1 Rag Phase wax
no good

301 7 Room
3 Rag wax
good 5.3 ctr lb

302 8 Room
2 Rag wax
too sticky

303 9 Room
1 Rag wax
not good

304 8 Room
1 Japan wax
1 Rag wax
not good

305 7 Room
1 Japan wax
2 Rag wax
no good

306 6 Room
1 Japan wax
3 Rag wax
no good 5.9 ctr lb

307 7 Room
1 Rag wax
1 Japan wax
1 256
no good 3.73 ctr lb

308 7 Room
1 Rag wax
1 Japan wax
1 257
no good 3.65 ctr lb

309 6 Room
1 Rag wax
2 Japan wax
1 256
no good 4.5 ctr lb

310 6 Room
2 Rag wax
1 Japan wax
1 256
no good 5.3 ctr lb

311 6 Room
1 Rag wax
1 Japan wax
2 256 4.7 ctr lb
no good

312 6 Rosin
1 Rog way
1 Japan way
1 257
no good 5.2 cts

313 6 Rosin
1 Rog way
2 Japan way
1 257
no good 4.4 cts

314 6 Rosin
1 Rog way
1 Japan way
2 257
no good 4.5 cts

315 6 Rosin
1 Japan way
3 Stearate Lido
2 256
no good 6.1 cts Cl.

316 6 Rosin
2 Japan way
2 Stearate Lido
2-256
no good 5.9 cts

317 -7 Rosin
2 Bay way
1 Spermaceti
no good 9.35 cts

318 7 Rosin
1 Crude Anthracen
1 Bay way
1 Spermaceti
no good 6.75 cts

319 6 Rosin
2 Bay way
2 Anthracen
no good 7.1 cts

320 5 Rosin
3 Bay way
2-257
no good 11 cts

321 5 Rosin
3 Bay way
2 256
no good 11.25 cts

3.22 - 6 Resin
2 Stearate of Soda
1 Japan wax
1 Stearate Aluminum
no good 4.3 cts

3.2 3 150-6 Resin
30-1 Stearate Soda
60-2 Stearate Aluminum
30-1 Japan wax
good 4.5 ct

3.24 6 Resin
3 Stearate Aluminum
1 Japan wax
no good 4.7 cts

3.25 6 Resin
2 Stearate Soda
2 Stearate Aluminum
1 Japan wax
no good 5.45 cts

3.26 150-5 Resin
90-3 Stearate Soda
30 1 Stearate Aluminum
30-1 Japan wax
no good 5.25 cts

3.27 150-5 Resin
30 1 Stearate Soda
90 3 Stearate Aluminum
30 1 Japan wax
no good 5.65 cts

3.28 5 Resin
4 Stearate Soda
1 Japan wax
no good 5.05 cts

3.29 150-5 Resin
120 4 Stearate Aluminum
30 1 Japan wax
good 5.85 cts

3.30 180 6 Resin
90 3 Reg wax
30 1 256
good 6.1 cts

3.31 5 Resin
3 Reg wax
2 256
no good 7.05 cts

332 5 - 256
5 - 257
no good 9.5 cts

333 4 - 256
4 - 257
2 - Rosin
no good 8.9 cts

334 3 - 256
3 - 257
[illegible]
no good 5.9 cts

335 3 256
4 257
3 Rosin
no good 6.75 cts

336 4 256
3 257
3 Rosin
no good 6.85 cts

337 2 - 257
3 - 256
5 Rosin
no good 5.05 cts

338 7 Rosin
2 1/2 256
1/2 Bay wax
no good 4.35 cts

339 7 Rosin
2 1/2 256
1/2 Spermaceti
no good 4.35 cts

340 210 7 Rosin
60 2 256
15 1/2 Spermaceti
15 1/2 Bay wax
good 5.35 cts

341 7 Rosin
2 Crude Anthracen
1/2 Spermaceti
1/2 Bay wax
no good 4.15 cts

342 7 Rosin
2 1/2 Crude Anthracen
1/2 Bay wax
no good 2.85 cts

343 7 Rosin
2 Crude Anthracen
1 Spermaceti
no good 4.15 cts

344 7 Rosin
2 Crude Anthracen
1 Bay wax
no good 4.15 cts

345 7 Rosin
1/2 Crude Anth
1/2 Spermaceti
no good 2.85 cts

346 5 Crude Anthracen
2 - 256
1 Rosin
no good 4.15 cts

347 6 Crude Anthracen
2 256
2 Rosin
no good 4.5 cts

348 7 Crude Anthracen
2 256
1 Rosin
no good 4.85 cts

349 5 Crude Anthracen
1 Reg wax
2 Rosin
1 Stearate of Soda
1 " " Alumina
no good 5.9 cts

350 5 Crude Anthracen
2 Rosin
2 Stearate Soda
1 Spermaceti
no good 7.1 cts

351 6 1/2 Rosin
2 Reg wax
1/2 Japan wax
1 257
no good 4.8 cts

352 250 grams Carnauba wax
1/2 " Na2O
750 " Syrian asphalt
at 8.5 cts lb

353 9 grams 352
" Rosin
negord

354 8 " 352
2 " Rosin
negord

355 7 " 352
3 " Rosin
negord

356 6 " 352
4 " Rosin
negord

357 5 " 352
5 " Rosin
negord

358 4 " 352
6 " Rosin
negord

359 3 " 352
7 " Rosin
negord

360 9 grams 352
1 " Trinidad refiled
negord

361 8 " 352
2 " Trinidad
negord

362 7 " 352
3 " Trinidad
negord

363 6 " 352
4 " Trinidad
negord

364 5 " 352
5 " Trinidad
negord

365 4 " 352
6 " Trinidad
negord

366 3 " 352
7 " Trinidad
negord

367 9 grams 352
1 " Cocoa Butter
no good

368 8 " 352
2 " Cocoa Butter
p.

369 7 " 352
3 " Cocoa Butter
no good

370 6 " 352
4 " Cocoa Butter
no good

371 5 " 352
5 " Cocoa Butter
no good

372 9 " 352
1 " Crude Anthracen
no good

373 8 " 352
2 " Anthracen
no good

374 7 grams 352
3 " Anthracen
no good

375 6 " 352
4 " Anthracen
no good

376 5 " 352
5 " Anthracen
no good

377 4 " 352
6 " Anthracen
no good

378 3 " 352
7 " Anthracen
no good

379 9 " 352
1 6 Japan wax
good

380 8 " 352
2 " Japan wax
fair

381 7 grams 352
3 " Japan wax

382 6 " 352
4 " Japan wax
no good

383 5 " 352
5 " Japan wax

384 4 " 352
6 " Japan wax
no good

385 9 " 352
1 " yellow beeswax
no good

386 8 " 352
2 " yellow beeswax
no good

387 7 " 352
3 " beeswax

388 6 - 352
4 - beeswax

389 5 " 352
5 " beeswax

390 9 " 352
1 " flowers of Sulphur
no good

391 9 " 352
1 " Ozokerite
no good

392 8 " 352
2 " Ozokerite
no good

393 7 " 352
3 " Ozokerite
no good

394 6 " 352
4 " Ozokerite

395 5 Parts 352
5 " Azobenzite

396 4 " 352
6 " Azobenzite

397 3 " 352
7 " Azobenzite
no good

398 2 " 352
8 " Azobenzite
no good

399 1 " 352
9 " Azobenzite
no good

400 9 - 352
1 Naphthalin

401 8 - 352
2 Naphthalin

402 9 - 352
1 - Soft Mexican Asphalt
no good

403 8 - 352
2 - Soft Mexican

404 7 - 352
3 - Soft Mexican

405 6 - 352
4 Soft Mexican
no good

406 9 - 352 1
1 Sumac

407 8 - 352
2 - Sumac

408 7 - 352
3 - Sumac
no good

409 - 6 - 352
4 - Sumac
no good

410 - 5 - 352
5 - Sumac
no good

411 9 - 352
1 Stearic of Soda

412 8 352
2 Stearic of Soda
no good

413 7 - 352
3 - Stearate of Soda

414 6 - 352
4 - Stearate of Soda
no good

415 5 - 352
5 - Stearate of Soda

416 9 - 352
1 - Crude Paraffin

417 8 - 352
2 - Paraffin

418 7 - 352
3 - Paraffin

419 6 - 352
4 - Paraffin

420 5 - 352
5 - Paraffin

421 9 - 352
1 - Sodium Aluminate
no good

422 8 - 352
2 Sodium Aluminate

423 7 - 352
3 - Sodium Aluminate
no good

424 6 - 352
4 - Sodium Aluminate
no good

425 5 - 352
5 Sodium aluminate
no good

426 9 - 352
1 - Stearate of Aluminum
no good

427 8 - 352
2 - Stearate of Aluminum

428 7 - 352
3 - Aluminum Stearate

429 6 - 352
4 - Aluminum Stearate

430 5 - 352
5 Aluminum Stearate

431 9 Rosin
1 Crude Paraffin
to much Rosin

432 ^{200}-8 Rosin
^{50}-2 Crude Paraffin
very good but electrical
but scratches

433 ^{175}-7 Rosin
^{175}-3 Crude Paraffin
good, hard, not electrical, but
scratches

434 ^{150}-6 Rosin
^{100}-4 Crude Paraffin
good, hard, not electrical
but scratches

435 ^{125}-5 Rosin
^{125}-5 Crude Paraffin
good

436 9 Trinidad asphalt
1 Crude Paraffin

437 8 Trinidad
2 Crude Paraffin

438 7 Trinidad
3 Crude Paraffin

439 6 Trinidad
4 Crude Paraffin

440 5 Trinidad
5 Crude Paraffin
no good

441 7 - Rosin
2 - Crude Paraffin
1 - Carnauba,

442 - 7 - Rosin
2 - Crude Paraffin
1 - 256

443 - 7 Rosin
2 - Crude Paraffin,
1 - Syrian,

444 7 - Rosin,
2 - Crude Paraffin
1 - 257

445 150 - 6 Rosin
75 - 3 Crude Paraffin,
25 1 - 256

446 150 6 Rosin
75 - 3 Crude Paraffin,
25 1 - Carnauba,

447 150 - 6 - Rosin
75 3 Crude Paraffin,
25 1 257

448 150 6 Rosin,
75 3 Crude Paraffin
25 1 - Syrian. paid
Cerotic acid 5 cts a lb

449 150 6 Rosin
50 2 Paraffin
75 1 Co 256
75 1 Stearat of Soda
Mogul

450 150 6 Rosin
50 2 Paraffin
50 2 Stearate of Soda

451 150 6 Rosin
50 2 Paraffin
50 2 256

452 125 5 Rosin
50 2 Paraffin
75 3 256

453 125 5 Rosin
50 2 Paraffin
50 2 256
25 1 Stearate of Soda

454 125 5 Rosin
50 2 Paraffin
25 1 256
50 2 Stearate of Soda

455 125 5 Rosin
50 2 Paraffin
75 3 Stearat of Soda

456 125 5 Rosin
125 75 Paraffin
50 2 Syrian asphalt

457 125 5 Rosin
50 2 Paraffin
75 3 Syrian asphalt

458 100 4 Rosin
75 3 Paraffin
75 3 Syrian Asphalt

459 100-4 Resin
50-2 Paraffin
10-1 Syrian Asphalt

460 [illegible]
[illegible]

461 200-8 Resin
25-1 Paraffin
25-1 Palm Oil

462 175-7 Resin
50-2 Paraffin
25-1 Palm Oil

463 90-6 Resin
45-3 Paraffin
15-1 Palm Oil

464 90-6 Resin
15-1 Paraffin
15-1 Stearate Soda
15-1 Syrian Asphalt

465 75-5 Resin
30-2 Paraffin
15-1 Stearate Soda
15-1 Syrian Asphalt

466 75-5 Resin
30-2 Paraffin
7½-1½ Stearate Soda
22½-4½ Syrian Asphalt

467 125-125 Resin
50-100 Paraffin
12½-25 Syrian

468 125-125 Resin
53.75-107½ Paraffin
18.75-37½ Syrian
no Gum

469 95-5 Resin
60-4 Syrian
15-1 Paraffin
no Gum

470 { 250 carnauba 9.2 cts lb
1 NaOH
175 Syrian asphalt

471 { 150 Rosin
75 Paraffin
25 Syrian asphalt

472 20 1 gram 470
80 4 " 471

473 10 1 " 470
90 9 " 471

474 30 3 " 470
70 7 " 471

475 40 4 " 470
60 6 " 471

476 50 5 " 470
50 5 " 471

477 duplicate of 473
gots lb 5.88 grams saponified carnauba
8 " " 13.12 " Syrian asphalt
4 " " 27.00 " Paraffin
½ " " 54.00 " Rosin
100.00
cost 3.47 cts lb.

478 6 saponified carnauba
13 Syrian asphalt
27 Paraffin
54 Rosin
cost 3.47 cts lb.
The saponified carnauba is made by melting 250 parts carnauba and adding 1 part sodium hydrate.

479 5 saponified Carnauba
15 Syrian Asphalt
30 Paraffin
50 Rosin

480 7 Saponified Carnauba
10 Syrian Asphalt
30 Paraffin
53 Rosin

481 7 calcined Canauba
12 syrian asphalt
25 paraffine
56 resin, good
only a trifling scratch after two months standing in air.

482 5 calcined Canauba
12 syrian asphalt
20 paraffine
60 resin

483 5 calcined Canauba
15 syrian asphalt
20 paraffin
57 resin

484 5½ canauba
7½ soda
13 syrian asphalt
27 paraffine
54 resin

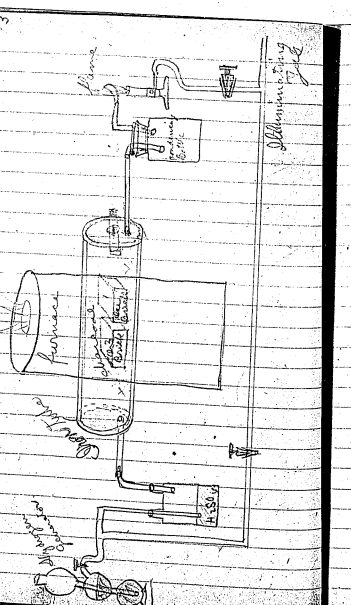
Continued on page 125

Dec 27th 1893

Some brisked regular Edison Ogden Concentrate were surrounded with crushed charcoal and placed in an iron tube, to be reduced to metallic iron. The air from the tube was displaced by coal gas (illuminating gas) and this by hydrogen. The H. was washed by H_2SO_4, and a condensing bottle was placed at the end of the tube, to collect the water formed by the action of the hydrogen on the hot ore.

Furnace started at 1.40 P.M.
" stopped " 5.55
Two briks in tube, Time 4¼ hours
#1 weighed 427 grams before reducing
#2 " 435 " " "
#1 " 332 " after "
#2 " 326 " " "
Briks were so placed that #2 would be reduced first.
(Diagram of apparatus on next page)
Temperature exp'd a low white heat, probably 1800° to 2000°?

Diagram of apparatus used to reduce the bricks Dec 27-1893



Illuminating gas was allowed to pass through the hot tube until the tube and contents had become cold, the bricks removed the following morning.

On examining the bricks it was found that they had either warped, or the temperature had been so great that they softened, and the reduced part expanded more than the unreduced side.

The bricks were only reduced on one side.

Assuming the oxide brick to contain 65% iron, it should have lost 24.8% oxygen.

#1 brick lost 95 grams, should have lost 106 grams to have been completely reduced, or about 110 grams, allowing for petroleum gas etc.

#2 brick lost 109 grams, should have lost 108 grams of oxygen showing that it is almost completely reduced, after allowing for petroleum etc.

Dec 28th 1893

Expt of Dec 27 with bricks of one repeated using larger size charcoal, no fine stuff, so as to allow a free circulation of hydrogen gas.
Two bricks placed in ~~one~~ tube, #3 + #4.
Furnace started at 1.10 PM.
" stopped " "
#3 brick weighed 406 grams before heating
#4 " " 469 " " " "
#3 " " " after " "
#4 " " " " " "
Bricks so placed that #3 will be reduced first.
Bricks were laid horizontally as in first expt.
At 2.45 it was discovered that the iron tube had been burned through + furnace was shut off.

Dec 30th 1893

Expt made with two unbaked bricks, the idea being to bake them in an atmosphere of H, + then reduce them at the same time.
These bricks were made with 4 lbs of a mixture of 2 lbs rosin, 1 lb lima petroleum.
The condensing tube became full of a dark brown colored gas or vapor, which burned with a yellow smoky flame.
Furnace started at 1.40 PM.
Temp, orange heat probably 1400° - 1500° ?
Furnace stopped at 5.40 PM + bricks cooled in an atmosphere of illuminating gas.
When removed Dec 31st it was found that the bricks had cracked in small pieces and crumbled easily. This may have been due to having been heated to rapidly.
Time 4 hours

Jan 2nd 1894

Same under all [illegible]
baked in charcoal [illegible]
on [illegible]
Two of the bricks were [illegible]
in [illegible] the [illegible]
[illegible] the [illegible] C.O. and
[illegible] in [illegible]
Furnace started at 5:30 PM.
[illegible] yellow heat.
Furnace stopped at 3:45
Hydrogen passed until [illegible]
[illegible] and then
illuminating gas passed until
[illegible] cooled.
On removing it was found
that neither brick had been
much injured the horizontal
brick was beginning to crack
across the middle and the
horizontal bricks had already
cracked
Time 1 1/4 hours

Jan 3rd 1894

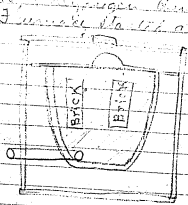
Two bricks baked in charcoal
were placed horizontally in
the iron tube and ~~[illegible]~~
illuminating gas passed until
air had been expelled then
hydrogen passed, & heated to
about 2000°F.
Furnace started at 1:15 PM.
At 3:00 it was noticed that about
a dozen [illegible] flames of
hydrogen were burning on
surface of the tube in the furnace.
These bricks will probably crack up
in cooling, and the tube will have
to be rejected after experiment is
ended.
Color of furnace very bright yellow.
Furnace stopped at 5:45 and
bricks cooled off in an atmosphere
of illuminating gas.
On removing after cooling, it was
found the bricks had cracked.
Time 4 1/2 hours

Dec. 4th 1894

Tube removed, and two bricks placed in a graphite crucible, [illegible] in tube passed [illegible] hydrogen. The bricks were surrounded with charcoal.

Air was shut off & hydrogen then admitted.

Furnace started at 2:00 P.M.



Time 3 3/4 hours

The Hydrogen gas was washed with H_2O & dried via $CaCl_2$ tube.

Furnace stopped at 5.45 P.M.

On removing the bricks, it was found that the iron had sweated out of the bricks, they had been heated to high, were very "Little".

Temp. low white heat 2000°F – 2200°F.

Jan 5th 1893

Two bricks reduced in crucible with hydrogen as spoken of.

Furnace started at 1.30.

Temp. Bright red, pistol 1900°-1500°

Orange heat

Furnace stopped at 6:00 P.M.

Hydrogen passed off cold.

On removing the bricks they appeared to be perfectly reduced, [illegible] on breaking them the [illegible] found to be coated [illegible]

Mr. Edison says the temp. is to high.

On trying the [illegible] on an [illegible] bulb they left behind a small metallic [illegible] in color. I think the temp. is set right, but the bricks were not heated long enough, nor the hydrogen passed long enough.

Time 4 1/2 hours

Jan [illegible]

The bricks placed in muffle well covered with Large Charcoal reduced with hydrogen as usual

Furnace started at 2.00 P.M.

Temp Red hot. about 900°-1000° F.

Furnace shut down at 6.00 P.M.

Illuminating gas passed until 6 P.M.

When bricks were removed they were found reduced ~~Oxidized~~ quickly on the bend and had every appearance of being burned.

Time 4 hours

These bricks were made with Lime + Rosin mush, 45 lbs per ton, baked to 500° F for 1 hour, in charcoal

Jan 9th

The bricks placed in muffle well covered with Large Charcoal reduced with hydrogen as usual

Furnace started at 10.00 A.M.

Temp bright red to dull range.

Furnace shut down at 6.00 P.M.

Illuminating gas kept passing through all night.

On removing the bricks next morning they had not been reduced quickly ~~oxidized~~

Time 8 hours.

These bricks were made with Lime + Rosin mush, 45 lbs per ton — Baked to 500° F for 1 hour, in charcoal

Jan 10th 1904

Two sound bricks placed in crucible and covered with charcoal, the charcoal was placed so as to cause a very fine flame around the bricks, which the top of a small piece of crucible had an abundance of charcoal, as well as a free oxidation furnace closed at 9.05 AM.
Temp Bright Orange probably 1400-1500°F
Furnace opened 6.00 P.M.
Bricks stiff yet passed till cold.
On removing bricks, found they were not reduced, but had cracked into a number of pieces.

Jan 11th

Two sound bricks put bottom muffle with Lime Oil + Resin and had been fired in charcoal and a half of large Corsan Sludge acid bricks that had not been fired in charcoal but in graphite crucible & well covered with charcoal & heated to yellow heat, probably 1800°F
furnace closed at 9.45 AM.
furnace opened at 6.00 P.M.
Bricks cooled off in furnace.
On removing bricks, found that they had not reduced, but had cracked up considerable
There was no difference in the appearance of the sludge acid & Rosin bricks

Jan 12th 1892

Two round brick placed in iron tube surrounded with charcoal, all placed in a tube behind furnace.
Furnace started at 10.30 am.
Temp. Change not probably 12 m - 1 pm
Furnace shut down at 6.00 PM.
On unwrapping the bricks they had not been reduced, but had cracked in several places.

Jan 13th 1892

Two round rein bricks and ½ of a large sludge acid brick placed in tube, surrounded with charcoal.
Furnace started at 9.30 AM.
Temp. Fair according to Pyling.
Furnace stopped at 4.30 P.M.
Cooled with Hydrogen to prevent oxidation.
Bricks removed Monday, had partially reduced to a minimum, which, they had all cracked a little, what this is due to, I am not understand, unless it is some mechanical method which beating exactly such a pressure that the bricks crack.

Jan 18th 1894

3 pound sample Lupis placed in tube, in a hot drill [illegible] Oxygen. In [illegible] hydrogen passed. Furnace slowly up to 1 P.M. [illegible] At 3 P.M. furnace [illegible] high heat, [illegible] the particles of iron together. [illegible] Hydrogen. When reduced it was found that the tube had not reduced in the part which rested on the metal of the boat

Jan 16th 1893

Tubular [illegible] in boat [illegible] (5–1½ meals) placed [illegible] Hydrogen can [illegible] boat.

Furnace started at 12:00 A.M.

Temp. Orange yellow

[illegible] Hydrogen + then [illegible] eliminating [illegible] passed through [illegible] it was found that the boat had been thoroughly reduced and had partially oxidized again

Jan 18th

[illegible] Heat well [illegible] well [illegible]
Furnace started at 7.30 Am
Temp. [illegible]
Furnace stopped at 1.00 PM
Fire 3 [illegible]
[illegible]
[illegible] 2 P.M.
[illegible] every
[illegible] the [illegible]
[illegible] happens
[illegible] had [illegible] and
[illegible] required to do the work.

Jan 19th 1894

[illegible] bar [illegible]
[illegible]
Furnace started at 9.45 - PM.
Temp. [illegible] well [illegible] 1220
[illegible] to prevent bricks from
[illegible]
Temp. Change
Furnace stopped at 5.00 PM
Called in [illegible]
[illegible] they have been
[illegible] and not [illegible]
[illegible] together

Jan 20th 1894

Placed one brick in heat surrounded with less than 16 meal charcoal, & passed by dragon as usual

Furnace started 9.15 AM.

Temp. very bright yellow.

Furnace stopped at 3.00 P.M.

Brick cooled in hydrogen

When removed it was seen that the particles had not melted together altho, but was thus prepared.

Jan 22 - 1894

Placed 1 brick in heat but did not surround it with charcoal as it seems as if it melts together better if it is not so covered.

H_2SO_4 bass sp. g. of 1.79, which seems to cube. Heavy rapid, it was abs. into the chamber [illegible]

Furnace started at 10.00 AM

Temp. Yellow heat.

Stopped at 2.00 P.M.

Cooled in H. gas.

When removed, it was reduced all over, and on sawing in half was reduced all through

Jan 24th 1894

Placed 3 bricks on crucible, not surrounded with charcoal, but charcoal lumps placed at each end of boat.
Started Furnace 9:00 AM.
started slowly, to try to prevent trip from ordering.
Stopped at 12:00 M.
Started at 1:00 PM.
Stopped at 4:15 PM.
Temp. Bright yellow.
Total Time 6¼ hours.
Cooled in Hydrogen.
Bricks had not been thoroughly reduced, more charcoal added placed in tube again.

Jan 25th 1894

Same bricks as Jan 24th
Heated again.
Furnace started gradually, at 9:30 AM.
Final Temp. Yellow hot.
Furnace stopped at 2:45 the tube had been burned through
When tube was cold bricks were removed were thoroughly reduced on the outside but treating one stand not thoroughly reduced were inclined to minimize conditions

Jan 26th 1894

Made an expt with a thermo electric couple using plate Cu O + C separated by a piece of fire brick. Elements were placed in a bath of melted Na_2CO_3 ammonia process, + E.M.F. + Amperes taken.

Volts - -.05 to +.075
Amp - 0.01 mp. - 2 mp
Amp - 0.02 2 mp / 1 cu 3 mp - 0.1 nordc
Amp - 0.03 1 mp 3 mp nordc
Amp - 0.02 - 2 mp 3 mp nordc

A gas is given off at the carbon electrode

Amp 20 c.c.
30 " "
40 " "
30 " "

Duplicate expt with fused lead.

Amps 3.5 amps. 50 volts
" 4 "
" 5 "
6 "
7 "

Electrodes between 5-7

Amps 35 ma a
40 " "
50 " "
60 " "
70 " "

Expt repeated with a mixture equal parts of Na_2SO_4 & Na_2O fused.

In immersing electrodes,
Amperes 4.0 ma 0 volts
in glass 3 minutes 60 " 0 "
fused mass frothed and
liquid on which electrodes
were immersed, on removing
it subsided. Action at it
was again at a quiet rate,
electrodes were again immersed.
On again immersing
Amps. 2.0 ma 0 volts

Expt. repeated with Na_2O fused

1180 m.a. no ppts.
1400 - 1450 ma " " Cl
750 " " " " "
solution pitched & filled on electrodes removed.

1.45 amp.

This expt repeated with a resistance of 0.25 ohm in series with amperemeter -
amps. with res. 80 ma
" without res. 116 - 100
" with res 90 -
" " 130
without " 140
" 120
with " 100

Expt with NaCl
without res 15 m.a.
with " 10 " "

Sodium Nitrate

with res 1 mgr.
without " 3 " c.

Phosphate of Soda

with res
without res.

Phosphate could not be found.

Chloride of Soda
without res. see amp.
with " " "

Resinophate of Soda
with res
without res

Combines with iron pan
& melts easily & bottom falls
out

Magnesia Sulphate
insoluble

Magnesia Chloride,
decomposes. Hot zinc chloride
solid remains.

Bi Cadmate of Potash
could get no reading
no milli Amperes, deflection
the table.

Chloride of Calcium

decomposes, given off HCl

[illegible] gave to potato & [illegible]

Boracic Acid

[illegible] as [illegible] that it could not be [illegible]

Hyposulphite Soda

Sulphur
Iodine
resulting compound gives no current

Sulphide of Soda

[illegible] current [illegible]

Jan 30th 1894

Test of [illegible] composed of
Sn, Pb, & solution of KI
in H_2O, 3g. KI in 12g. H_2O
Started at 11.15 A.M.
Amps at start 50 milli amps
Volts [illegible] Ckt [illegible]
Open Circuit no reading
at 11.25 87 milli amps.
" 11.40 100 " "
" 11.50 130 " "
" 12.00 160 " "
" 12.30 166 " "
" 4.10 200 " "
" 6.10 200 " "
" 8.30 Am, Jan 31st 1894 200 milli amp.

Jan 30th

Cell with 1½g KI, 1½g KOH
12g H_2O Sn + Cu.

In starting test, 3.20 PM
current 170 milli amp. in 75 Ω
in 5 minutes 3.25 " " (a glass rod broke current)
at 3.30 PM. 410 " "
" 3.50 600 " " no volts
" 4.10 900 " " "
" 6.10 1500 " " "
" 8.30 AM, Jan 31st, 100 milli amperes.

Feb. 3rd 1894

The following Illustration are assayed for Nitro.
2151, 2156, 2157, 2161, 2162, 2163, 2164, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2175, 2177.
A portion of each one was selected according to the amount of sample, so as to represent a fair average, so, were ground to 120 mesh, well mixed, and 5 grams of each mixed with No. ClO_3 fused in a porcelain crucible & Sulphur, Ground charcoal also used with the No. (ClO_3).

Experiment made to determine the cause of the regular Rosin & Lime, juice becoming thicker by further application of heat.
100 grams rosin,
50 " Lime were melted & mixed in a Enameled dish, and heated to 200°F for 1 hour, at the end of that time had lost 12 grams in weight, = 24% of Lime. In adding more lime & heating for 6 hours at 200°F, & adding sufficient lime to keep weight constant it was found that the juice had become considerably thicker after cooling than when first mixed this may be due to light particles of air having been driven off, up to the Resin having gone further into solution.

Test of rate of flow of juice
per well, hot juice.

Weight of can 10½ gs.
juice running well except that
in 15 min. 10 collected 6.5 gs.
= 26 gs per minute, well
up full, sta. 16 to 39 holes.
This is equivalent to
At 20 cts (45 lbs juice per ton)
tap open full for 1 min, 10 gs
for 100 lbs ore,
At 12.5 cts (28 lbs juice per ton)
tap open full for 46 seconds, or
open to 7.7 on index for 1 minute,
to 100 lbs ore.

1. 19 mesh crude ore ground to
powder, separated in the usual way,
a powder by carbon magnetic
this placed in a test tube in
the light reducing in tube an
an atmosphere of hydrogen, allowed
to cool in illuminating gas,
and then ground to 100 mesh,
gave 2.75 % Fe by assay mag.

Thursday 7th 1894

Some Experiments made mixing chemical lime, petroleum with kerosene, naphtha + turpentine to facilitate mixing.

#1

22 ozs lime
6 lbs lime = 2 cts
22½ " " + lime juice = 1½ cts

Mixed with cold oil.
1/3 taken + mixed with juice
Upon this mixed with balance
of oil. Mixes easy, but does
not brick well in hands

#2

Reg. 12½ cts mixed, to be used as a standard for comparison

#3

Naphtha – Sp g 0.67
Cost 3.5 cts gal = 5.36 lbs per gal
= 1.53 lbs per ct = 0.653 cts per lb

4 lbs naphtha – when added to oil seemed to be lost it did not appear to wet it at all. Did not make any apparent difference in the mixing. I think it all evaporated. When mixed, it appeared to be rather dry, but will be repeated

#4

Kerosene, Sp g 0.768
cost 3.5 cts per gal

4 lbs kerosene – when added appeared to wet it, although not much.

5

Cost of Rosin Oil.
[illegible] 6 cts gal
= 0.75 cts lb = 1.33 lbs, 1 ct

2 lbs per ton used = 1½ cts.
10 cts juice.
difficult to mix, not very good
does not brick well in bag,
feels dry.

6

Rosin oil,
4 lbs per ton 3 cts,
10 cts juice.

difficult to mix,
not so good as regular 12 oz
much off when mixed.

Notes on the use of
rosin oil in place of
petroleum to dissolve the
rosin for the juice.

1

10 grams Rosin
1 " Rosin Oil
solid when cold

2

10 grams Rosin
2 " Rosin Oil
solid when cold

3

10 grams Rosin
3 " Rosin Oil
solid when cold

4

10 grams Rosin
4 " Rosin Oil
very stiff when cold.

#5

10 grams [illegible]

[illegible]

[illegible] (K. mustard. [illegible]) Cost [illegible]

#6

10 grams Resin

6 " Resin Oil

20 " [illegible] Wax old

[illegible] Agree [illegible]

Resin Oil costs 0.75 cts lb.

Coal

Tar pitch

[illegible]

Lime

Pecina

Refined Kerosene

[illegible]

Aqua [illegible]

is partly soluble in

Turpentine

[illegible]

Made some Exists with Resin oil -

10 lbs Pitch 5 lbs Resin Oil

mead a good gas reg. mixture

15 lbs dat 1/3 cut turpentine

15 lbs Reg juice

10 lbs Pitch, 7½ lbs Resin Oil

Good

10 lbs Pitch, 10 lbs Resin Oil

Good

Brick made with 12 lbs [illegible]
& 10 lbs [illegible] 2 lbs [illegible]
& 26 lbs [illegible]
Mixed in [illegible]
[illegible] with difficulty, and in
[illegible]

Brick made with 12 lbs [illegible]
& 10 lbs [illegible] [illegible]
& 22.34 lbs [illegible]
[illegible]
hard.

Wax Cylinders, Dec. 1892 70
Jan. 15th 1893

4.5 Saponified [illegible] (2 NaOH, 1 H_2O)
15 Syrian asphalt
5 Paraffin
5 Stearate Alumina
5 Rosin
[illegible]

[illegible] 50 Rosin
25 Paraffin
25 Syrian asphalt
scratches frightfully

Mar 19th 1894

Experiments made on Pour hot rosin on Linseed Lay.

Hot rosin poured in a dry bag used for samples of oil. Rosin filtered through readily.

Hot rosin poured in a bag that had been placed in cold water for a few minutes. Then squeezed until only a small quantity of water remained in the bag.

Rosin evaporated the water, & filtered through.

Hot Rosin poured in bag that had been placed in a hot saturated sol. of Na_2CO_3, and water allowed to run off. Rosin evaporated water, Na_2CO_3 formed a crust on the fibre which closed the pores, Rosin did not filter through.

Experiment made to determine the insolubility of Regular Lime & Rosin juice, & a mixture of 1 part Lime Oil & 2 parts Wood Tar Pitch, this cooling, the insolubility of each was at the same. The Rosin & Lime juice was more sticky than the Wood Tar Pitch.

Experiments on solvents for Coal Tar Pitch

1 Creosote oil dissolves it perfectly.

2 1 Part Rosin Oil, 1 part Lime oil do not dissolve pitch, it separates on cooling.

3 Pine Oil does not dissolve it after mixing and allowing to cool it separates & pitch seems to be changed by the action of the acid in the oil.

4 3 Parts Rosin Oil & 1 Part Lime Oil dissolve Pitch, but it does not

very sticky after cooling.

5 A mixture of [illegible] weather fine & fish juice, 1/2 parts fine Oil, dissolves pitch when [illegible] cooling

6 Acid Oil from Bone works acid dissolves Pitch

7 Refined Oil f. petroleum works [illegible] dissolves pitch

8 [illegible] solubles in Red Oil & [illegible] gives a sticky mixture.

9 Wood tar Oil dissolves it & is a sticky mixture

10 Separated acid oil treated with Na_2O in solution + Pitch added + heated. The Na_2O separates sludge from the acid oil + this melts with the pitch. The same result is obtained when Dry Soda Hydrate is

heated with the acid oil. The soda seems to combine with an acid besides sludge, with this so salt is soluble, but $PaCl_2$ precipitates it as a hard substance

11 Coal Tar pitch, small quantity of creosote. This is sticky but too stiff. When supplying heat, it is not sticky.

Blue Oil, Soda, & Pitch - Pitch separates out as then as before.

13 - 1 Part Wood tar Oil, 2 Parts coal Pitch,

Mar 20th 1894

Made a poi[illegible] to try to regenerate the sludge from the coke residue of sludge acid.

A portion was ground up, thrown in water, filtered, it filtered very slowly, the ~~the~~ residue made seemed to dissolve in the water, but filt[illegible] very slowly and gave an acid reaction.

This water gives a pink with $BaCl_2$ which is not $BaSO_4$, although there may be some present.

If this acid solution be neutralized with HCl, Fe_2Cl_6 & heated or left for some time in the cold, good sticky sludge is regenerated although it is not as good as fresh sludge.

If dry coke stuff be ground with Na_2CO_3 in excess & then heated with HCl to dissolve the Na_2CO_3 & then washed, Chloroform, Benzol, toluol, turpentine & CS_2 extract sticky sludge from the residue.

This residue is soluble in strong Sulphuric Acid. None of the ordinary

[illegible] the coke sludge be boiled with lime [illegible] a very bitter [illegible] high melting point, but little when old, is produced. The lime probably takes up the free sulphuric acid, & makes fresh sludge. This [illegible] regenerate [illegible] stuff.

Wed. 26th 1894

Experiments were made to determine the flow of regular resin juice through the orifice of a cock at different temperatures. The opening in the cock was rectangular in shape, and was opened in quarters, each flow being for 10 seconds.

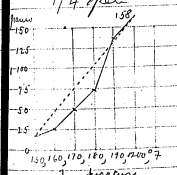
One of opening in cock,

Weights of juice in grams.

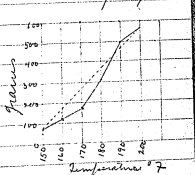
1/4		1/2		3/4		Full	
Temp.		Temp.		Temp.		Temp.	
150°F	11½	150°F	71	152°F	147	150°F	162
160	26	160	117	160	187	160	230
170	50	170	176			168	315
180	74	181	311	180	462	180	456
189½	136½	190	500	189	675	190	789
200	158	200	568	200	726	200	778

Curves with stop-cock

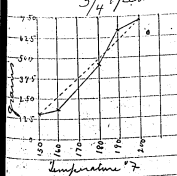
1/4 open



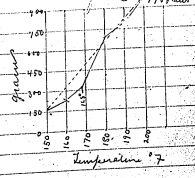
1/2 open



3/4 open



Full open



Saturday Mar 31st

Experiment in large mass
using 4 lbs of product.

100 lbs resin using
resin 12½ cts reg Resin
and
Penna Oil and 4 oz
[illegible]
[illegible] mix +
25 seconds for one to make
its appearance at about
this vessel mixed with
300 lbs of resin & Penna
through a screen.
This 200 lbs remixed with
300 lbs of resin through
again.
Then allowed to run
through again & make 4
mixes = 6 minutes.
We are now suitable
for kicking out on screen
found 59% of oil by weight
[illegible] accepted as "balls"
which had the equivalent of
juice at the rate of 500 lbs per ton

April 3rd

Experiments in this mixture
following quantities of
Resin + Penna Oil were
mixed to obtain a mixture
would be sufficient this when
cold to present "balls".

#1
Regular Mixture
100 Resin 50 Penna Oil

2
100 Resin 52½ Penna Oil

#3
100 Resin 55 Penna Oil

#4 100 Resin 57½ Penna Oil

#5
100 Resin 60 Penna Oil

#6 100 Resin 62½ Penna Oil

#7 100 Resin 65 Penna Oil

On account of the presence of

Some slides in the Pain of Mazzetti was not strictly in proportion to the 3% addition of petroleum, which would have been so, had they not been pressed

April 3rd

Experiments made with 20 lbs of one with a juice equivalent of Rosin & Pecan in the proportion of 4 – 3, at a cost of 14½ ct per lb = same quantity of rosin as in 12½ ct per juice

20 lbs are used, 2 lbs 13 oz juice used.

juice mixed with 7.5 lbs dry, run through sweet mixer, & molded in large pan, as balls,

2nd run

7.5 lbs dry are added, mixed & run as stiff, would do to slick, cut out as balls.

3rd run.

50 lbs are added, mixed & run in slab, is not stiff enough to brick after air-drying, would brick.

4th run

Total are run through, would brick, but should be balls, is better than air-dried #3

5th run

Total Run through, mixed brick made brick in hand mold in screw press, was all right, brick at a fall of 20 feet, mixed perfectly, bricks broken at 12 feet.

6th run

Run through is all right, will brick well, but is not pasty.

7th run

Total Run through, is all right is getting past, made brick in screw press, brick at 12 feet,

8th run

Run pot through, is fast, should make good bricks

April 4th

Each run is made with 25 lbs oil, 12½ cts of juice made of 4 Rosin & 3 Petroleum.

1st Run

7 cts 10 gal juice mixed with 45 lbs oil, mixed easily, no balls, is sticky

2nd run

45 lbs oil added, was a little sticky

3rd run

75 lbs oil added, oil is not sticky

4th Run

Total Run through, is not sticky, would not brick,

5th Run

Run through, is not sticky, might brick, but would not be in practice.

6th mix
the mix through is not sticky, not suitable for brick.
7th mix
the mix through is getting pasty, but is not satisfactory, would do in an emergency.
8th mix
the mix through is slightly pasty, would do.

April 5th 1894

5th mix with 12½ ounces of a mixture consisting of 1 lb 11 ozs lime & 1 lb 3½ ozs of Permanite, using ~~225~~ 225 lbs or & also quantity of juice.
juice mixed with 75 lbs or.

#1
juice mixed with 75 lbs or, put through machine, found 1 lb lime in about 2 lbs or is pasty

#2 75 lbs or added is sticky, will brick, is hard

#3 75 lbs or added, is dry not sticky, will ~~not stick~~ not brick,

#4 is wet, but not sticky will not brick.

#5
is getting sticky but is not suitable for making bricks.

#6 is pasty will brick but should be better.

#7 is pasty will brick no balls.

#8 is pasty bricks well made brick in hand mill used just as one made in brick machine in recent experiments.

7th 1894

Experiment of April 6th repeated with some results.

April 7th 1894
Experiment made with 12.5 cts of a mixture of 1 lb 11 oz soda + 1 lb 4½ oz Pennoil

1st Run
Muck mixed with 75 lbs or is sticky, no hard balls, remained soft only in a lb.
#2
75 lbs more are added - will brick not sticky, no hard balls.
#3
75 lbs are added, is dry will not brick, no balls.
#4
No balls, will brick but is not good enough, not sticky.
#5
no balls, will brick, is getting wet, but not sticky

#6
[illegible] will brick [illegible]
sufficiently sticky.
[illegible] Ellis [illegible] to dissolve
the suffer [illegible] to dry.

April 7th 1894

Expt with Brick of 1 lb 11 oz
resin & 1 lb 4½ oz Lima lime
225 lbs ore used.
1st
juice mixed with 75 lbs ore, ore
balls is pasty, but not sticky
#2
75 lbs ore added, ore is dry,
but will brick.
#3
75 lbs ore added, ore is very
dry, will not brick.
#4
Ore is getting wet, not sticky,
will brick, but not well.
#5
will brick, but poorly

#6
will brick [illegible] [illegible] better
#7
is not a little sticky, & will
brick but not well.
#8
will brick, but is not sticky
enough.

April 9th
Expt with Brick of 2 lb 2½ oz Lime
1 lb 3¼ oz Lima lime; 225 lbs ore.
1st run
juice mixed with 75 lbs ore, is
sticky, contains balls
2nd
75 lbs ore added, is good enough
to brick, contains balls
3rd run
75 lbs ore added, will not brick,
contains balls,
4th
Contains balls, will brick but dries
to better, is not dry.

5th
[illegible] Resin, [illegible] brick, and is [illegible]
6th
[illegible] good, will brick well, contains a few balls
7th good, will brick, contains few balls
8th
A very few balls, is excellent brick well in D.K.
On morning of April 10th, #8 had dried considerable, but will brick.

This corresponds to 6.77 % additional Lima, or 100 Resin, 5.3.4 Lima.

Effect on next page, 29 grs Resin, 16½ grs Lime = 13.8 % additional Lime, or 100 Resin, 56.9 Lime.

(See page 154) April 9th 1896

[illegible] with 12½ grs of 29 grs Resin, + 16½ grs Lime Chl.
1st Time
Juice mixed with 7 Slbs no, is pasty, [illegible] as many balls as with equal, but they are not hard.
2nd
7 Slbs no added, will brick, contains balls,
3rd
7 Slbs no added, will not brick, [illegible] balls, not many.
4th run,
A few balls, will brick, but should be better, does not feel sticky,
5th
A few balls, will brick, is not sticky,
6th run
A few balls, will brick, is not sticky enough
7th
very few balls, will brick, is getting pasty,
8th
practically, no balls, no is pasty enough, will brick well
On morning of April 10th, #8 is no good, it had dried up, would not brick.

April 10th 1897

Experiment with 12½ cts worth of a mixture of 28% 92 Rosin, 17 1/4 92 Lima Petroleum 1/4 pint

juice mixed with 75 lbs ore, is pretty as many balls in regular, but no hard balls.

#2

75 lbs ore added, a few balls, no hard ones, will brick.

#3

75 lbs ore added, a few soft balls, will not brick, to dry.

#4

a few balls, will brick, and so dry.

#5

a few balls, will brick, is getting sticky.

#6

practically no balls, is all right, is sticky, will brick.

#7 Practically, no balls, is sticky, will brick well

mud brick in screw press, with an inner, at a distance of 2'6" from crusher of screw, is about the same as the last bricks made in the machine, duplicate brick at a 7 foot fall.

#8

is all right, no balls, brickes well, is sticky.

This experiment corresponds to an increase of 23.86 %, say 24 % Lima Petroleum, using 12½ cents worth, with Rosin at ½ ct, & Lima at 1/3 ct per lb.

and gives the best results.

The Springs in my screw show a pressure of 20 lbs on the spring.

This equals 1½ Rosin, 6½ Lima.

April - 11th 1894

Duplicate

Experiment of page 156, with 10 lb springs in mixing, in the place of 30 lb springs.

#1

Mixed with 75 lbs ore, contains about 30% balls, they are not hard, and it appears that they are due to the springs being too light, will not brick.

#2

75 lbs ore added, will not brick, about 15% balls.

#3

75 lbs ore added, will not brick, very dry, about 10% balls.

#4

Will not brick, balls have not diminished in dry.

#5, will not brick in dry.

#6 " " " " "

#7 " " " " "

#8 " " " " same number of balls as in #3, is also very dry.

Tests of torque of small mixer with 10 lb springs

Empty.

Starting Torque, 9 lbs

Running Torque, 7.5 lbs.

Pulley has a radius of 12", gears are 5 to 1, End of spreader is 8" from center of shaft =

$9 \times 5 \times 12 \div 8 =$

$9 \times 7.5 = 67.5$ lbs starting torque

$7.5 \times 5 \times 12 \div 8 = 7.5 \times 7.5 = 56.25$ lbs running torque.

Machine with contains 225 lbs ore,

Starting torque = 55 lbs,

Running Torque 50 lbs,

$55 \times 5 \times 12 \div 8 = 55 \times 7.5 = 412.5$ lbs starting torque

$50 \times 5 \times 12 \div 8 = 50 \times 7.5 = 375$ lbs running torque.

April 12th 1900

Test of torque of small mixer with 120 springs in spring-ends.

Starting torque, 10 3/4 lbs, = 80 inch
Running torque 9 1/2 " 71.2 "

Filling mixer with 12 1/4 ozs wet Gypsum and of 28 1/2 Rosin
17 1/4 Lime Cl = 110 Rosin, 62 Gypsum.

#1

Mixer run with 75 lbs ore, is sticky, will brick, but contains about 20% balls.

#2

75 lbs ore added, will not brick, is wet sticky, balls not diminished.

#3

75 lbs ore added, will not brick, is not sticky, balls are reducing.

#4

will brick, but should be better, balls about 5%

#5

Will brick, less balls, is pasty.

#6

Will brick, is pasty, still has balls.

#7

will brick, is pasty, balls same, mix brick 18 " 16' is O.K.

#8

is pasty will brick well, very small quantity of balls.

Torque of machine with 275 lbs ore

Starting, 55 1/2 lbs =
Running, 54 1/2 lbs =

with 175 lbs ore in machine

Starting 47 1/2 lbs =
Running 45 lbs =

April 15th 1900

Experiments made with a view of using wood tar oil in place of linseed oil.

#1

Some mixed with 12½ ozs wood tar oil (2.75 cts a gallon, sp. g. = 1.01), mixed stiff, very poor.

#2

12½ cts worth of mixture of 250 parts wood tar oil, 100 parts rosin, mixed with no wax, very pasty, a little loaded with zinc white, dry in 2 days.

#3

10 cts worth of 250 wood tar oil + 10 parts rosin mixed with no varnish, a little hard, is to good, is very pasty.

#4

8 cts worth of 250 lbs wood tar oil, 100 lbs rosin, mixed

with one, is pasty, is all right. (Mixture dried in 5 days for 1 day like W. fall of a foot on asphalt pavement.

#5

8 cts worth of 250 wood tar oil, 100 rosin mixed with no wax and very thin, dries hard, made bitty with red lead, very pasty.

#6

12½ cts worth of 100 wood tar oil + 100 wood tar pitch (wood pitch worth $2.00 per ton) varnish with linseed oil, good luck, stated for 1½ hours at 520°F.

Test of spring used in small mixer, is made of 3/16" dia. brass rod is 3 7/8" long, has 9 complete convolutions using dia. 15/16" outside diameter, 1 5/16" when placed in spreader is 3 5/16" long.

By mistake this spring was filed down from 20 lb. to 15 lb. Tension should have been 20 lb.

A fan belt was placed in spreader and fastened to spreader part in parallel to cord pulley on end of spreader as would occur in practice.

a compression of	1/8"	required	10 lb.	
" " "	1/4"	"	15 1/4 "	= 5 1/4
" " "	3/8"	"	21 1/2	6 1/4
" " "	1/2"	"	27 1/4	5 3/4
" " "	5/8"	"	34	6 3/4
" " "	3/4"	"	38	4
" " "	7/8"	"	45 1/2	7 1/2
" " "	1	"	52	6 1/2
" " "	1 1/8"	"	57 1/2	5 1/2
" " "	1 1/4"	"	63	5 1/2
" " "	1 3/8"	"	70 1/2	7 1/2
Slid at	1 13/32"	"	79 1/2	9

Average pressure for 1/8" = 6.0 lbs.

April 16th

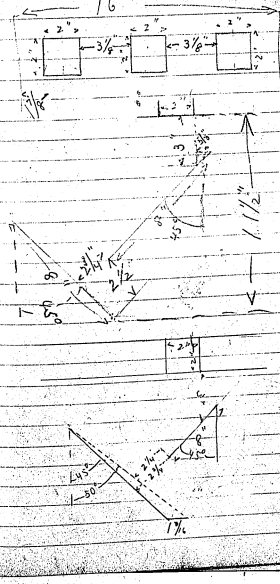
Experiment of feeding one fan [illegible]

We passed through 3 - 2" square sticks, so separated that we fell into uniform stream from second axis plot, on to screen below.

Working face of screen sticks 16" Experiment made with 50 lbs or (5 mesh) larger than 5 mesh & smaller than 1 1/2" in any direction, this being the largest size that will be put through in practice.

The following is a sketch with dimensions of the apparatus used.

The one used in this experiment is red herring, and all the 5 mesh sieved out, & no pieces larger than 1 1/4" in any direction.



Assay of New fuel at Ogden of Iron Ore, for Phosphorus.
2 grams used -
digested in aqua regia
gave yellow ppt of 1.08 mg. =
8.8/1000 % P -

April 20th -

110 Rosin, 62 Head Oil
mixed & melted. Compared
with 100 Rosin + 62 Lima. The
Lima mixture is heavy
liquid as sticky as the
Head oil mixture.

150 Rosin, 250 Stockholm Tar,
(wood tar) mixed & melted,
resulted very liquid & sticky.

made bids with each of the
above using 12½ cts. freely
assuming that Head oil &
Wood tar is the same price
as Lima Petroleum

#1
28 lbs of Head oil + Rosin, 12½ cts.
#2
33 lbs of Wood tar + Rosin, 12½ cts.

#1

3.37 grams, 4.3 grams of [illegible] Wood O.K. 62 = 12½ cts,
mixes easily, mill brick,
is not pasty, sticky,
makes brick in screw press, lay it
3 feet from cooler, warm on lay,
chipped at 32°F, 1 hour,
flow, 61.7%
OK 38.3% } bake at 7 feet on asphalt floor.

(12½ cts worth) #2
3.37 grams or, 4.8 grams of
100 K coal, 250 grams Wood Tar,
mixes fairly well, mill brick,
is not pasty nor sticky,
it feels wet,
makes brick in screw press, lay it
3 feet from cooler, warm on lay,
chipped at 32°F, 1 hour.

bake at 7 feet on asphalt floor.

Coal Tar pitch 800 lbs in 2240 lbs =
= 2.8 lbs per ct, = 0.35 cts per lb

Wood tar, at 0.33 cts per lb = 3 lbs
per ct.

A mixture of 100 lbs wood tar + 100 lbs
Blast furnace pitch, 36¼ cts = 12½ cts
do stuff

100 lbs pitch, 120 lbs Wood tar, asph

#3
100 lbs pitch, 130 lbs Wood Tar O.K.
36¼ cts = 12½ cts

It mixes a little ~~after~~ hard but
is extraordinarily good, it is darker
& harder that can be cleaned
from, 12½ cts. Chipped at 7 feet on
asphalt floor.

#4
100 lbs Scotch Pitch, 150 lbs wood tar
= 250 lbs for 84.1 cts practically
3 lbs per ct, 12½ cts, 37½ lbs
525 lbs mixture 3.37 lbs ~~[illegible]~~
mixes easily is very pasty
makes well, baked brick at 6
hours well

500 ft [illegible] Chopped at 7 feet in asphalt tests is O.K.

April 25th 1890

Wood expt with 12½ cts of Rosin + Wood oil, Proportions, 100 Rosin, 62 Wood Oil = 1.76 lbs Rosin, 1.09 lbs Oil 225 lbs tow = 18 ozs Rosin, 11 ozs Oil.

#1

Juice mixed with 75 lbs one, a small quantity of soft balls, no hard ones, is not sticky, will brick.

#2

75 lbs added, not but not sticky is doubtful if it will brick well, small number of soft balls.

#3

75 lbs one added is not wet not sticky, will not brick, practically no balls.

#4

not sticky, wet, will not brick, no balls

#5

not sticky, will not brick, no balls

#6

not sticky, wet, might brick but is not good enough, no balls.

#7

Looks dry but pasty, no balls, getting sticky.

#8 will brick, no balls, not very sticky

(Wood oil + Rosin is not as good as Linseed Oil + Rosin)

2 Potash + 2 borax bricks immersed in #1 & 2 for 15 hours, gained 0.43% in weight

#2

Experiment with 100 Rosin 250 Wood tar = 15.14 ozs Rosin 37.66 ozs wood tar 225 lbs tow = 12½ cts per 225 lbs. Wood tar + rosin mixed + heated carefully seems not to have any notable portions.

#1

Juice mixed with 75 lbs one, will brick well, very sticky, a few soft balls.

#2, 75 lbs one added, 1 soft ball, not very sticky

#3
75 lbs used for 1st lab,
not well and sticky,
#4
Sticky and sticky practically
no balls
#5 Practically no balls, is
not fine sticky, must brick,
#6 no balls will brick, is
very sticky.
#7
no balls, will brick, not very sticky
#8
no balls, will brick, is not very good.

A pungent aromatic, acid odor issues from the alumina flux, when in mixture.

Cannot be kicked, cracks like with lime.

Expl detonator will same magnesite.

It need less coolants to mud water.

Portion mixed & heat stored, kicked, baked, absorbed 0.44% in weight of water after an immersion of 15 hr.

#6
[illegible] used 1% Potash, 200 Mesh tare, 12% etc work to 22 mo [illegible]
used 1.97% [illegible] Potash, 38.5 [illegible] Mesh tare [illegible] less as [illegible]
#1
juice [illegible] used 75 lbs [illegible] balls, [illegible]
#2
75 lbs used 2% balls will [illegible] brick.
#3
75 lbs used less than 1% balls not, dust will not brick.
#4
Practically no balls, will brick should be [illegible]
#5
Practically no balls, will brick but not good enough.
#6
Practically no balls, will brick
#7
will brick, no balls
#8
no balls, should brick well.
(see next page)

made bricks in some parts all [illegible] water bins still not stick together.

Tried an experiment with 110 lb. [illegible] 135 lbs. [illegible] to stiff mortar, under bowl [illegible] sand in sac gave cement brick it.
Mixed by hand in mortar box briqued, & baked, absorbed 4.3% of water after an immersion of 15 hours.

Regular 100 Rosin 62 lime, mixed in big mixer, briqued & baked, absorbed 6.00% of water during an immersion of 15 hours.

april 18th

Experiments with small assay rolls, connected to shaker screen. Rolls were run to have a velocity of 400 surface feet per minute = 255 revolutions per min. (6" rolls) 1 lb. 14 mesh crude Ogden Ore. Time taken to run through rolls + off screen

started 9.25, off screen at 9.26½
started 9.31 " " " 9.32
" 9.35½ " " " 9.36½
" 9.40 " " " 9.40½
" 9.43 " " " 9.43½
" 9.45½ " " " 9.45¾

total time required if screen had been 100 mesh, instead of 50 mesh, 4¾ minutes. The fines + coarse were sifted through 100 mesh sieve + coarse run through rolls again + process repeated until a minimum residue of 0.5 grams remained which could not easily be ground up = 0.11% of total.
The screen has a tendency to throw on one side, is not properly constructed, should be wider + longer.

Clay from creek in Hudson 35.8%
gelatine assayed for Am-?

5 grams Hudson sediment assayed
for Cu, Ni, Co

Some of the material used as the coating
in the carbon beads with HCl to
remove any silicates which might
be in HCl imported, residue
fused with K_2CO_3, this mass
dissolved in HCl & evaporated to
dryness, redissolved in HCl & evapo-
rated to dryness to render Si insoluble
digested in HCl,
passed H_2S a sulphide ppt
imported filtered added NH_4OH
ppt of Al & Fe
Added $(NH_4)_2S$ to filtrate from this
gave no ppt even after heating & stirring
some time
Added K_2CO_3 gave copious white ppt which
looks like glutinous silica
NH_4Cl_2 gave no such ppt.

109 – 108

95 – 101

1.0496

5292 . 54

162000 1011

27 162

3.47 27.6

435 61

76 1380

109 1656

1694.0

724) 1448

3460

2896 564 8

6 5.22.4 × 27.6

427 427

24.8 332

95

5776

1708

854

106.196

5.88 13.12

9 8

5292 10496

27

162

13

627

435

24.8

3480

1740

870

107880

15-2"

16) 224 (14

16

64

2

(414

32

Hinnesota	30 cts
White Cedar	13½
Apple 4	7
Tarriff	6
Good Butter	6
Hay-Hay	
Ginger Anthracene	4
Celic Acid	3
Napthalene	3
Epson Salt	10 cts

3.14.'83

178 2.1 ~~3.2~~ 147.4

16.8 36

126 1.0 4.6 ~~4.8~~ 1/4

1.0

3.6 8 126

105 40

50 10.5 5.26

6.05 50

2.75 6.05 147

9 8.4 50 126

3475 60 4.07

6.8 ~~4~~ 3.5

65 56

275 x 3 50

6 8.25 7.6

1650 275 1375

275 6

1925 275

2200

.138 2.00

8

6.00

.54

8.5

137
250
387

46

Reg. 16
Cow 10.0

90
350

41

21.9
189
25.9

P

48
150
250

22

64
64
48

80
20.5

15.0

147
3.52

21.9
16.8
14
3.08

6
1316
8

20
180
120
48
37.0

4.1
4.0
6.4
8.6

12.3
21.9

21.9
189
25.9

~~Estimate Inclosing~~

Orange

Newfy

From

To.